

ORIGINAL

BEFORE THE ARIZONA CORPORATION



2001 DEC 19 P 4:04

WILLIAM A. MUNDELL  
CHAIRMAN  
JIM IRVIN  
COMMISSIONER  
MARC SPITZER  
COMMISSIONER

AZ CORP COMMISSION  
DOCUMENT CONTROL

IN THE MATTER OF QWEST CORPORATION'S  
TARIFF FILING TO INTRODUCE A NEW RATE  
STRUCTURE FOR AN ACCESS SERVICE USED  
BY INTEREXCHANGE CARRIERS

Docket No. T-01051B-01-0391

NOTICE OF FILING

Cox Arizona Telcom, L.L.C. hereby files the attached Direct Testimony of Dr.  
Francis R. Collins.

DATED: December 19, 2001.

Respectfully submitted,

COX ARIZONA TELCOM, L.L.C.

Arizona Corporation Commission

DOCKETED

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**BEFORE THE ARIZONA CORPORATION COMMISSION**

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IN THE MATTER OF QWEST CORPORATION'S  
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Docket No. T-01051B-01-0391

**Direct Testimony of**  
**Dr. Francis R. Collins**  
**on Behalf of**  
**Cox Arizona Telcom, L.L.C.**

**DECEMBER 19, 2001**

1           **A.    IDENTIFICATION AND QUALIFICATION OF WITNESS**

2    Q.    WHAT IS YOUR NAME AND BUSINESS ADDRESS?

3    A.    My name is Francis R. Collins and my business address is P.O. Box 272, Newton,  
4           MA 02459.

5    Q.    BY WHOM ARE YOU EMPLOYED AND IN WHAT POSITION?

6    A.    I am employed by CCL Corporation, a company that provides public policy,  
7           technical, and economic counsel in the fields of telecommunications and cable  
8           television. I am the president of CCL Corporation.

9    Q.    DR. COLLINS, ON WHOSE BEHALF ARE YOU APPEARING IN THIS  
10           PROCEEDING?

11   A.    My testimony is presented on behalf of Cox Arizona Telcom, L.L.C. ("Cox"),  
12           which is a facilities-based provider of local telecommunications services in  
13           Arizona.

14   Q.    WHAT IS YOUR BACKGROUND AND EXPERIENCE?

15   A.    I have been employed in the telecommunications industry for the past thirty-nine  
16           (39) years. I began my professional career in telecommunications at Bell  
17           Telephone Laboratories where I worked for six (6) years designing and developing  
18           broadband telecommunication network technology. I have provided independent  
19           public policy, managerial, system design, technology application and economic  
20           counsel to various domestic and foreign clients.

21           My relevant experience includes appearances as an expert witness on a wide  
22           variety of telecommunications public policy, technical and economic matters  
23           before various regulatory agencies in the United States, as well as assistance to  
24           clients in the development of telecommunications systems in ten (10) other

1 countries. *Exhibit FRC-A* to this testimony contains additional information  
2 concerning my professional background and experience.

3 **B. PURPOSE OF TESTIMONY**

4 Q. DR. COLLINS, WHAT IS THE PURPOSE OF YOUR TESTIMONY?

5 A. My testimony is intended to provide the Commission with information and  
6 comment on the Qwest filing in this Docket and to address the testimony of the  
7 Qwest witness, Mr. McIntyre. In doing so, I will show that the Qwest filing  
8 suffers from technological, economic, and public policy flaws. It is anti-  
9 competitive and is likely to slow down the current rate of competitive local  
10 exchange service market penetration in Arizona even further.

11 **C. SUMMARY OF TESTIMONY**

12 Q. PLEASE PROVIDE A SUMMARY OF YOUR TESTIMONY.

13 A. The Qwest filing should not be approved by the Commission because it is flawed  
14 from regulatory and public policy, economic, and technical perspectives. Qwest's  
15 SS7 network is a multi-functional signaling network. Qwest's proposal in this  
16 filing will have the effect of inappropriately charging (directly or indirectly) some  
17 carriers, like Cox, for SS7 messages associated with the transport and termination  
18 of local calls to which the terms of Cox/Qwest interconnection agreement should  
19 apply, not Qwest's intrastate switched access tariff.

20 Qwest's claimed inability to differentiate between types of signaling traffic  
21 entering or leaving its SS7 network leads to fatal flaws in its ability to charge  
22 correctly for some signaling messages and to not charge for others. The technical  
23 deficiencies lead to the situation wherein Qwest cannot properly measure usage  
24 segregated appropriately for charging purposes and cannot issue an accurate bill  
25 which is capable of being audited by the billed parties. Qwest proposes simply to  
26 ignore these deficiencies and charge for all signaling traffic, whether this is

1 appropriate or not. The off-setting rate reductions proposed by Qwest will flow all  
2 of the so-called "revenue neutral" rate reductions to customer's of Qwest's  
3 interstate switched access service. In fact, Qwest's proposal will, in some cases,  
4 ensure that it will double-recover its costs from both interexchange carriers and  
5 CLECs. This situation must be remedied before the proposed tariff is allowed to  
6 take effect.

#### 7 **D. BACKGROUND**

8 Q. DR. COLLINS, PLEASE PROVIDE THE COMMISSION WITH SOME  
9 BACKGROUND OF SS7 SIGNALING AND THE CIRCUMSTANCES THAT  
10 LED TO THE FILING OF QWEST'S TARIFF.

11 A. Common Channel Signaling (CCS), including CCS using the SS7 protocol, is a  
12 method for exchanging call setup and call control information between switches  
13 via a network of signaling links that are separate from the voice and data  
14 connections – such signaling is commonly referred to as "out-of-band." The out-  
15 of-band messages are used to report circuit seizure and transport address  
16 information, answer supervision, circuit release, etc. SS7 messages between two  
17 signaling points may be routed over a signaling links directly connecting the two  
18 points, e.g., between Qwest and an interconnected LEC, or via one or more  
19 intermediate signaling points that relay the signaling messages, e.g., between  
20 Qwest, a third party signaling provider and a distant LEC. In switching systems  
21 where CCS is used for call connection signaling, these out-of-band signaling  
22 messages replace Multifrequency (MF) and other "inband" signaling mechanisms  
23 previously used for call setup.

24 When employing in-band signaling, interconnected switches exchange call  
25 setup supervisory signals, e.g., on-hook and off-hook status signals, as well as  
26 addressing information, e.g., calling and called party telephone numbers, using  
27 equipment and software wholly resident in each switch. When employing CCS

1 signaling, this same call setup function is accomplished in a distributed manner  
2 using equipment and software contained in the switches as well as in centralized  
3 signaling nodes that may serve a large number of switches, *i.e.*, signal transfer  
4 points.

5 On an interstate basis, the FCC issued a ruling that permitted carriers to  
6 break out SS7 costs from other switching and transport costs that taken together  
7 make up the rates for switched access. However the FCC also made it clear that  
8 ILECs doing such unbundling could only do so after preparing their measurement  
9 and billing systems to produce accurate and accountable bills<sup>1</sup>.

10 Qwest (then US West) filed a federal tariff that reflected the unbundling of  
11 the SS7 costs from other switched access costs and, according to Qwest, did so on  
12 a revenue neutral basis and without supporting cost studies for the tariff. US West  
13 instead indicated to the FCC that the Ameritech cost support filings should extend  
14 to US West.<sup>2</sup> This is an interesting position for US West to take in-so-far as it has  
15 always claimed that each of its own operating areas is unique as to costs because  
16 of local situations. Coat-tailing on Ameritech's cost support is certainly a  
17 departure from this perspective.

18 Qwest, with the filing of the tariff at issue in this Docket, is attempting to  
19 move FCC sanctioned interstate "unbundled" tariff structure into the intrastate  
20 intraLATA services (intraLATA toll and local/EAS) domain. However, this  
21 domain is more complex than that of interstate switched access. IntraLATA traffic  
22 contains distinct sub-classifications of local/EAS, toll calls exchanged between  
23 Qwest and other local carriers, and jointly-provided exchange access that must be  
24 taken into consideration. Of these three sub-classifications, only toll, when  
25 properly handled, is an appropriate candidate for application of Qwest's proposed

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<sup>1</sup> First Report and Order, 12 FCC Rcd 15982, 16090(para. 253) (1997).

1 rate structure.

2 In making their current intrastate filing, Qwest asserts that the rates in its  
3 filing result in revenue neutrality because the amount of revenue raised by the  
4 proposed rates is offset by the revenue decrease in Local Switching and Carrier  
5 Common Line costs. Qwest dismisses the fact that its proposal would charge  
6 CLECs the new SS7 rate elements on local/EAS, incoming intraLATA toll calls  
7 from Qwest's end user customers, and on jointly-provided exchange access calls  
8 (where Qwest also plans to charge the IXC!). So, in fact, the Qwest proposal is  
9 neither revenue neutral nor neutral between classes of carriers required to use  
10 Qwest's SS7 network for interconnection and exchange of traffic that is not  
11 intrastate switched access.

12 Qwest freely admits these flaws in its direct testimony in this case (*see*  
13 Direct Testimony of Scott A. McIntyre at 14-15), but excuses its tariff on the basis  
14 that "different customers utilize the network in different ways depending on how  
15 they operate their businesses." Qwest's flippant justification for the flaws in its  
16 tariff is a blatant attempt to avoid its obligation to measure different types of traffic  
17 and apply charges appropriately. The fact that CLECs, like Cox, do not need to  
18 use Qwest's intrastate switched access service to exchange traffic with Qwest –  
19 and instead use local interconnection agreements under the Telecommunications  
20 Act (which Qwest was aware of in drafting this tariff) – should not mean that  
21 Qwest can impose its switched access regime on that traffic and deny CLECs  
22 corresponding rate reductions. Qwest's approach effectively increases the cost of  
23 providing facilities-based local exchange service, particularly to residential  
24 customers, for the benefit of Qwest and large volume toll customers.

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<sup>2</sup> Expedited Petition of U.S. West Communications, Inc., In the Matter of Petition to Establish Part 69 Rate Elements for SS7 Signaling at 4 n.5 (attached at *Exhibit FRC-B*).

1 Q. WHAT IS THE RELATIONSHIP BETWEEN COX AND ILLUMINET?

2 A. Cox has entered into a contract with a third party provider, Illuminet, to serve as its  
3 agent with respect to SS7 signaling services contemplated under the Inter-  
4 connection Agreement with Qwest. This relationship has assisted Cox in  
5 providing local exchange service and choice to Arizona consumers as encouraged  
6 by this Commission. Cox established this relationship in order to secure outside  
7 expertise and for economic efficiencies as it started the deployment of local  
8 telephone service in Arizona. This contract provides for an automatic pass through  
9 of Qwest signaling charges to Cox, because Illuminet is the agent of Cox for  
10 purposes of signaling. Qwest has always been aware of this relationship between  
11 Cox and Illuminet and Qwest was certainly aware of this relationship at the time it  
12 drafted its proposed SS7 tariff. It is interesting to note that Cox is the primary  
13 facilities based competitive provider of residential service in Arizona and yet  
14 Qwest has proposed a tariff (that is supposed to be revenue neutral) that it knows  
15 will increase signaling costs to Cox's third party provider that is then obligated to  
16 pass such increase costs on to Cox. Cox believes that as its agent, Illuminet stands  
17 in the shoes of Cox for signaling pursuant to the interconnection agreement and  
18 that Qwest should be precluded from applying this tariff to Cox (through  
19 Illuminet) in a manner that will increase charges to Cox that has never been  
20 contemplated. Cox believes that the application of this tariff in the manner  
21 proposed by Qwest is anti-competitive as it unreasonably and unnecessarily  
22 impacts Cox, its largest competitor in the residential telephony market.

23 Q. IS IT YOUR UNDERSTANDING THAT QWEST CONSIDERS THIS  
24 REVENUE NEUTRAL TO COX AS IT IS NOT INCREASING ITS CHARGES  
25 TO COX BUT TO ILLUMINET?

26 A. Yes. It is my understanding that Qwest had indicated to Cox personnel that its  
27 position on this tariff is that it is not increasing Cox's costs, but it is affecting

1 Illuminet. Cox considers this to be a specious argument and is being used to  
2 justify Qwest's drafting of what it has billed as a "revenue neutral tariff" knowing  
3 the relationship *vis-a vis* Cox and Illuminet and the application of such pursuant to  
4 the Cox/Qwest Interconnection Agreement. As I indicated above, Cox uses  
5 Illuminet as its agent to for SS7 signaling services and as such, Illuminet stands in  
6 the shoes of Cox. It is disingenuous of Qwest to take the position that it is not  
7 raising Cox's costs.

8 Q. HOW DOES QWEST HANDLES SS7 CHARGES IN CONNECTION WITH ITS  
9 INTERACTIONS WITH OTHER ILECS?

10 A. Qwest's multi-function SS7 network handles many millions of signaling messages  
11 over many hundreds of separate signaling links. Some of those signaling links are  
12 connected to independent incumbent local exchange carriers ("Independents").  
13 The Commission should determine the interconnection and charging relationships  
14 between Qwest and Independents to determine what, if any, compensation  
15 arrangements exist for SS7 messages sent over those interconnections and how  
16 they differ from Qwest's tariff proposal here.

17 E. REGULATORY AND PUBLIC POLICY ISSUES

18 Q. DR. COLLINS, YOU INDICATED THAT THERE WERE REGULATORY  
19 AND PUBLIC POLICY ISSUES RAISED BY QWEST'S FILING. WHAT ARE  
20 THEY?

21 A. Qwest appears to be attempting to bootstrap their current intrastate filing onto the  
22 Qwest federal SS7 tariff filing. This bootstrap methodology suffers from a number  
23 of regulatory and public policy flaws. First, as a result of public policy at the  
24 federal and state level, the interLATA and intraLATA compensation regimes are  
25 distinct and unique. The uniqueness varies across the United States and therefore  
26 has been left to the jurisdiction of state regulators who are familiar with local  
27 needs and what would best serve the public interest.

1 In this Docket, Qwest attempts to ignore the relevant federal and state  
2 jurisdictional differences between interLATA toll traffic, which is a single  
3 category of traffic, and intraLATA traffic in general, which includes the categories  
4 of intraLATA toll, local/EAS, and jointly-provided exchange access. In this filing,  
5 Qwest is attempting to achieve improper parallel regulatory and public policy  
6 treatment.

7 The FCC recognized this very point wherein it declared in its Order  
8 addressing access charge reform: "The rules at issue here implement a different  
9 section of the Act – Section 201 – and they concern *interstate* charges only."<sup>3</sup> This  
10 representation by the FCC is clearly based on its desire to make explicit the  
11 implicit costs that historically have been buried in the cost of interstate telecom-  
12 munications and to do so on a revenue neutral basis. Based on this information,  
13 there is no standing regulatory or public policy basis for the Commission to  
14 approve the Qwest filing.

15 Q. YOU INDICATED THAT THE CATEGORIES OF TRAFFIC THAT MUST BE  
16 ADDRESSED IN AN INTRASTATE FILING ARE DIFFERENT THAN THAT  
17 ADDRESSED IN AN INTERSTATE FILING. WOULD YOU ELABORATE  
18 ON THESE ISSUES AND SUMMARIZE YOUR POSITION?

19 A. Intrastate intraLATA traffic consists of toll, local and extended area service (EAS),  
20 and jointly-provided exchange access to IXC toll traffic carriers. Of these three  
21 traffic categories, the only appropriate candidate for a filing such as Qwest has  
22 made in this docket is the toll traffic exchanged between Qwest and IXCs, and toll  
23 traffic sent by CLECs to Qwest. Even then Qwest's treatment of the technical  
24 measurements, the billing, and the determination of proper costs and the

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<sup>3</sup> In The Matter of Access Charge Reform, Price Cap Performance Review for Local Exchange Carriers, Transport Rate Structure and Pricing and End User Common Line Charges, CC Docket Nos: 96-262, 94-1, 91-213, and 95-72, First Report and Order, 12 FCC Rcd. 15982, 15988 (released 6/18/97).

1 determination of revenue neutrality must be done properly – unlike that which is  
2 proposed in the current tariff filing.

3 Local and EAS, intraLATA toll traffic sent by Qwest to CLECs, and  
4 jointly-provided access traffic are not appropriate candidates for Qwest's  
5 application of its proposed SS7 tariff (*i.e.*, intrastate access) charges. As I will  
6 explain below, regardless of the technology employed (e.g., multi-frequency, dial-  
7 pulse, CCS-SS7), the interoffice signaling associated with a LEC's termination of  
8 traffic is part of the call setup function for which contractual and/or tariffed  
9 charges may or may not apply in a LEC-to-CLEC relationship. Specifically:

10 (1) Where the LECs, such as Cox and Qwest, have included  
11 terms in their interconnection agreement specifying Bill and Keep for the exchange  
12 of local and EAS traffic, such compensation applies to the interoffice signaling  
13 employed by the LECs for the termination of local, therefore:

14 a. Qwest may not assess its proposed usage-based SS7  
15 signaling charges for SS7 signaling messages associated with local traffic  
16 exchanged between Qwest and such CLEC.

17 (2) Where the LECs, such as Cox and Qwest, have included  
18 terms in their interconnection agreement specifying the application of access  
19 charges for the exchange of intraLATA toll traffic, such compensation applies to  
20 the interoffice signaling employed by the LECs for the termination of toll traffic,  
21 therefore:

22 a. Qwest *may* assess its proposed usage-based SS7  
23 signaling charges only for SS7 signaling messages associated with Qwest's  
24 termination of intraLATA toll traffic sent *from* such CLEC *to* Qwest; and,

25 b. Qwest may *not* assess its proposed usage-based SS7  
26 signaling charges for SS7 signaling messages associated with its origination of  
27 intraLATA toll traffic sent *from* Qwest *to* such CLEC.

28 (3) Where the LECs, such as Cox and Qwest, have entered into a

1 Meet Point Billing agreement for handling jointly-provided exchange access, that  
2 agreed-to compensation method applies to the interoffice signaling employed by  
3 the LECs for traffic sent to and from IXC's, therefore:

4 a. Qwest's may not charge the CLEC its proposed usage-  
5 based SS7 signaling charges for the exchange (originating or terminating) of  
6 jointly-provided exchange access traffic between such CLEC and third party IXC's.

7 In the instant filing, Qwest attempts to shift its signaling costs from itself to  
8 its competitors, in violation of current regulations and its interconnection  
9 agreement.

10 Q. PLEASE EXPLAIN YOUR CONCERNS ABOUT THE IMPACT OF QWEST'S  
11 FILING ON LOCAL TRAFFIC.

12 A. Local and EAS traffic is handled technically and economically according to the  
13 terms of Interconnection Agreements (ICAs) between Qwest and CLECs.<sup>4</sup> These  
14 Agreements have directed the outcome of business cases upon which CLECs  
15 relied in getting into the local exchange service market place and must not be  
16 simply abridged by Qwest filing a tariff. One must note that Qwest's termination  
17 of calls originating on another carrier's network to Qwest customers completes  
18 Qwest's obligations to those customers. Qwest, in its end user charges for  
19 local/EAS service offerings, provides for the origination and *termination* of calls,  
20 not merely call origination. In the instant filing, it appears that Qwest is  
21 attempting to have its competitors pay the costs incurred in Qwest meeting this  
22 obligation.

23 "Bill and Keep" is one form of mutual compensation associated with the

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<sup>4</sup> 47 U.S.C. § 251(b)(5) describes an obligation for LECs to establish reciprocal compensation arrangements for the transport and termination of telecommunications and 47 U.S.C. § 252(d)(2)(A)(I) requires mutual recovery of the costs associated with termination of calls that originate on the network of another LECs.

1 exchange of local and EAS traffic for which Qwest's current filing is particularly  
2 onerous. Bill and Keep is a form of barter wherein one carrier pays the other in  
3 kind – which is in units of call termination. Bill and Keep is a compensation  
4 algorithm that is based on the rebuttable presumption that each carrier's costs are  
5 the same (or close enough to be acceptable) and that the traffic is balanced. These  
6 balanced costs included all of the components required by the originating carrier to  
7 use the terminating carrier's network to terminate traffic designated for the  
8 customers of the terminating carrier by those who call them. The end result being  
9 that the cost, including the call setup cost associated with SS7 signaling, to each of  
10 the participating carriers to terminate the traffic of the other carrier is the same or  
11 at least not more different than the dead-weight cost of mutual billing. Bill and  
12 Keep is an extremely efficient, cost minimizing, and forward-looking mechanism.  
13 Where Interconnection Agreements have obligated the parties to a Bill and Keep  
14 arrangement, *neither party* may bill the other for the termination of its local/EAS  
15 traffic; accordingly, neither party may bill the other for the call setup function  
16 associated with SS7 signaling. Cox and Qwest have had such an agreement in  
17 place for some time. Presumptively there are other carriers in the same position.

18 In Qwest's tariff proposal, the Bill and Keep approach to each company  
19 bearing its costs of transport and termination of all local/EAS calls between them  
20 is thrown out the window. Qwest now proposes that it alone will bill Cox for its  
21 signaling costs on all calls exchanged between them, even if the call is local and  
22 originates with a Qwest customer. Signaling, whether in-band or out-of-band like  
23 SS7, is an integral part of the termination of calls. Without signaling, there is no  
24 call. Similarly, without a call request from a customer, there is no need for call-  
25 related signaling (the ISUP messages described in Qwest's tariff proposal).  
26 Moreover, only one provider's network can terminate the final stage of a call to a  
27 given telephone number (*i.e.* there is no way to get around Qwest's termination of  
28 calls to Qwest local subscribers). Qwest is attempting to destroy the compensation

1 arrangement agreed to for local/EAS calls by treating ISUP call set-up and tear-  
2 down signaling as though it is some unrelated independent function. Finally,  
3 regardless of the particular local compensation method agreed to by the parties  
4 (e.g., Bill and Keep or Reciprocal Compensation), each carrier is solely  
5 responsible for its origination costs, i.e., those costs, including SS7 call setup,  
6 related to delivering originating local traffic to the other carrier's network for  
7 termination. FCC regulations, at 47 C.F.R. § 51.703(b), provide that:

8 *A LEC may not assess charges on any other telecom-*  
9 *munications carrier for local telecommunications traffic that*  
10 *originates on the LEC's network.*

11 And ACC regulations, at A.A.C. R14-2-1303(C), provide that:

12 *Each company interconnecting pursuant to the provisions of*  
13 *this Section shall be responsible for the traffic that originates*  
14 *on its network up to the point of interconnection, and for the*  
15 *terminating traffic handed off at the point of interconnection*  
16 *to the call's destination.*

17 In the instant filing, Qwest attempts to shift its signaling costs associated with its  
18 delivery of local traffic from itself to its competitors, in violation of current  
19 regulations and its interconnection agreement.

20 Q. IF QWEST WERE ALLOWED TO BILL COX FOR QWEST'S SS7  
21 SIGNALING ASSOCIATED WITH THE EXCHANGE OF LOCAL AND EAS  
22 TRAFFIC, WOULD COX'S COSTS BE OFFSET BY QWEST'S REDUCTION  
23 IN CARRIER COMMON LINE OR LOCAL SWITCHING RATES?

24 A. No. As explained above, with a Bill and Keep arrangement, *neither* party pays the  
25 other for termination of its local and EAS traffic. According to established  
26 practice and agreed-to terms of the interconnection agreement, Qwest does not bill  
27 and Cox does not pay *any* access charges (i.e., CCL and switching, whether  
28 reduced or not) for their exchange of local and EAS traffic. Qwest has never

1 billed Cox access charges for such traffic, so if it were to begin assessing a SS7  
2 access charge, it would be a new, net increase in Cox's costs (and Qwest's  
3 revenue).

4 Q. PLEASE EXPLAIN YOUR CONCERNS ABOUT THE IMPACT OF QWEST'S  
5 FILING ON INTRALATA TOLL TRAFFIC.

6 A. Consistent with long-standing industry practice concerning the mutual exchange of  
7 intraLATA toll traffic between LECs, the LECs operate not as co-carriers for this  
8 type of traffic, but, in effect, as LEC and IXC, with the sender of such traffic  
9 assuming the role of an IXC terminating its access traffic to the other party's local  
10 network. Accordingly, Cox and Qwest have agreed to exchange such traffic and to  
11 compensate one another for the termination of such traffic according to each  
12 carrier's access tariff. Cox and Qwest have formalized this arrangement in their  
13 interconnection agreement (ICA); the following are excerpts from the Cox/Qwest  
14 Interconnection Agreement and the numbers represent ICA sections:

15 5.4.5 Toll Traffic.

16 5.4.5.1. Toll traffic routed to an access tandem, or directly  
17 routed to an end office, will be terminated as Switched Access  
18 Service. Traffic terminated at the access tandem will be  
19 routed to the end offices within the LATA that subtend the  
20 U S WEST access tandem switch. Switched Access Service  
21 also allows for termination at an end office via direct trunked  
22 circuits provisioned either by U S WEST or Cox or both.

23 5.6 Rate Structure – Toll Traffic.

24 5.6.1. Applicable Switched Access Tariff rates, terms, and condi-  
25 tions apply to toll traffic routed to an access tandem, or  
26 directly to an end office. Relevant rate elements include  
27 Direct Trunk Transport (DTT) or Tandem Switched Transport  
28 (TST), Interconnection Charge (IC), Local Switching, and  
29 Carrier Common Line, as appropriate.

30 Qwest's proposed SS7 tariff, as currently designed, would have Qwest billing Cox,

1 as agreed, for call termination (including discrete or bundled charges for signaling  
2 messages) associated with Cox's intraLATA toll access traffic sent from Cox to  
3 Qwest. But Qwest's proposed tariff, as currently designed, would *also* have Qwest  
4 billing Cox for *Qwest's* termination of access traffic to *Cox*, in violation of  
5 standard industry practice, and the above agreement.

6 Q. IF QWEST WERE ALLOWED TO BILL COX FOR QWEST'S SS7  
7 SIGNALING ASSOCIATED WITH COX'S TERMINATION OF QWEST'S  
8 INTRALATA TOLL TRAFFIC, WOULD COX'S COSTS BE OFFSET BY  
9 QWEST'S REDUCTION IN CARRIER COMMON LINE OR LOCAL  
10 SWITCHING RATES?

11 A. No. As explained above, it is the *originating* LEC, who pays access charges to  
12 *terminating* LEC for traffic. According to established practice and agreed-to terms  
13 of the interconnection agreement, Qwest does not bill and Cox does not pay *any*  
14 access charges (*i.e.*, CCL and switching, whether reduced or not) for Cox's  
15 termination of Qwest's intraLATA toll traffic. Qwest has never billed Cox access  
16 charges for such traffic, so if it were to begin assessing a SS7 access charge, it  
17 would be a new, net increase in Cox's costs (and Qwest's revenue).

18 Q. PLEASE EXPLAIN YOUR CONCERNS ABOUT THE IMPACT OF QWEST'S  
19 FILING ON JOINTLY-PROVIDED EXCHANGE ACCESS SERVICES.

20 A. Jointly-provided exchange access service is one that is arrived at through a  
21 mutually acceptable agreement to do so. In these agreements (often within the  
22 ICA) the service is generally referred to as "Meet Point Billing." Meet Point  
23 Billing is a revenue-sharing arrangement between two or more local exchange  
24 carriers where they jointly provide access service to access customers, *e.g.*,  
25 interexchange carriers, under separate access tariffs. Cox's position is that where  
26 Qwest has entered into a Meet Point Billing arrangement with a CLEC, Qwest may  
27 not assess intrastate call setup charges for SS7 signaling messages associated with

1 the exchange of jointly-provided exchange access traffic between such CLEC and  
2 the third party IXCs. Qwest is attempting to do so with its current filing.

3 Q. WOULD YOU PROVIDE AN EXAMPLE OF WHY COX HAS THIS  
4 CONCERN?

5 A. Yes. The concern is that the filing, once again, is an effort by Qwest to end-run  
6 existing agreements and to do so while increasing the operating costs of its  
7 competitors. The following is an excerpt from the Cox/Qwest Interconnection  
8 Agreement and the numbers represent ICA sections:

9 *3.61 "Meet-Point Billing" ("MPB") refers to an arrangement*  
10 *whereby US WEST and Cox jointly provide facilities between a*  
11 *US WEST switch and a Cox switch (or vice versa) in order to*  
12 *provide switched access service to one or more interexchange*  
13 *carriers. MPB establishes the procedure to bill the interexchange*  
14 *carriers for the jointly provided switched access and to*  
15 *appropriately share the revenue based on the US WEST and Cox*  
16 *tariffs or contracts in effect. Reference US WEST Technical Pub.*  
17 *77384.*

18 Local Exchange carriers (including Cox and Qwest) typically follow MPB  
19 guidelines (Multiple Exchange Carrier Access Billing – MECAB), developed and  
20 maintained with extensive industry support, by the Ordering and Billing Forum  
21 (OBF).<sup>5</sup> The MECAB guidelines provide detailed information regarding common  
22 data elements and intercarrier processes critical for the provision of verifiable and  
23 auditable bills in multiple provider situations. Where LECs jointly provide  
24 exchange access to IXCs and use MECAB guidelines, each party bills the IXC,  
25 *and not one another*, for its provision of access service.

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<sup>5</sup> The OBF (a group of service provider and customer participants that meets to identify, discuss, and resolve national issues concerning the ordering and billing of access services) is under the auspices of the Carrier Liaison Committee (CLC) of the Alliance for Telecommunications Industry Solutions (ATIS), formerly the Exchange Carrier Exchange Carriers Standards Association (ECSA). The Federal Communications Commission (FCC) authorized the CLC in an MO&O released January 17, 1985.

1 In Arizona, Qwest performs a tandem transiting function between Cox end  
2 office(s) and IXCs. Cox and Qwest have agreed to a Meet Point Billing  
3 arrangement whereby each separately bills the appropriate tariffed switched access  
4 rate for its portion of the access service jointly provided to these IXCs. Following  
5 are the MPB terms from the Cox/Qwest interconnection agreement:

6 *5.13 Billing Arrangements*

7 *5.13.1 Based on the negotiated POI, the Parties will agree*  
8 *on a meet point percentage to enable the joint provisioning*  
9 *and billing of Switched Access Services to third parties in*  
10 *accordance with the Meet-Point Billing guidelines adopted*  
11 *by and contained in the Ordering and Billing Forum's*  
12 *MECAB and MECOD documents and referenced in*  
13 *US WEST's Switched Access Tariffs. The Parties under-*  
14 *stand and agree that MPB arrangements are available and*  
15 *functional only to/from Interexchange Carriers who directly*  
16 *connect with the tandem(s) that Cox sub-tends in each LATA.*

17 . . .

18 *5.13.2 The Parties will use reasonable efforts, individually*  
19 *and collectively, to maintain provisions in their respective*  
20 *federal and state access tariffs, and/or provisions within the*  
21 *National Exchange Carrier Association ("NECA") Tariff No.*  
22 *4, or any successor tariff, sufficient to reflect this MPB*  
23 *arrangement, including MPB percentages.*

24 *5.13.3 As detailed in the MECAB document, Cox and*  
25 *US WEST will exchange all information necessary to bill*  
26 *third parties for Switched Access Services traffic jointly*  
27 *handled by Cox and US WEST via the meet point*  
28 *arrangement in a timely fashion. Information shall be*  
29 *exchanged in Exchange Message Record ("EMR") format*  
30 *(Bellcore Standard BR 010-200-010, as amended) on*  
31 *magnetic tape or via a mutually acceptable electronic file*  
32 *transfer protocol. The Parties will negotiate compensation*  
33 *for file transfer (underline added); additionally, the Parties*  
34 *will negotiate the data exchange required to support local*  
35 *interconnection compensation.*

36 Note that, by referring to the underlined provision, the only possible additional

1 charges anticipated between Cox and Qwest are those that may be negotiated for  
2 the exchange of billing data or file transfers required to implement MPB billing.

3 Q. IS THERE ANY VALID REASON FOR QWEST TO CHARGE COX FOR THE  
4 SIGNALING MESSAGES EXCHANGED BETWEEN COX AND QWEST ON  
5 MEET POINT BILLING TRAFFIC TO/FROM ACCESS CUSTOMERS?

6 A. No. Industry guidelines agreed to by Cox and Qwest contemplate both of the local  
7 carriers (LECs) involved in the MPB arrangement charging third-party IXC's for  
8 originating and terminating access according to each LEC's access tariff. Under  
9 such arrangements, *neither* LEC charges the other for such traffic.

10 The interconnection agreement between Cox and Qwest does not include  
11 provisions for Qwest to collect additional compensation from Cox for SS7  
12 signaling or any other call setup functions associated with MPB traffic (nor does it  
13 include provisions for Cox to charge *Qwest* a similar fee for Cox's signaling  
14 associated with jointly-provided exchange access).

15 Q. IF QWEST WERE ALLOWED TO CHARGE COX FOR QWEST'S SS7  
16 SIGNALING FOR MPB TRAFFIC, WOULD QWEST RECOVER SIGNALING  
17 COSTS IT WOULD OTHERWISE NOT RECOVER?

18 A. No. Qwest's direct testimony confirms Cox's position that Qwest's costs for its  
19 SS7 network associated with MPB traffic are (and always have been) included in  
20 the access charges billed to and paid by the IXC's (*see* Direct Testimony of Scott A  
21 McIntyre at 8: "The costs for the SS7 network have been included with other  
22 switched access costs and recovered through standard switched access rate  
23 elements."). So, if this tariff is simply a revenue neutral reconfiguration of  
24 Qwest's access charges (moving SS7 costs out of CCL and switching and into new  
25 rate elements), it is clear that if Qwest charges *both* the IXC *and* Cox for SS7  
26 signaling on a MPB call, either Qwest will *double recover* its SS7 costs or there is  
27 a cross subsidy being set into place between CLECs and IXC's.

1 Q. IF QWEST WERE ALLOWED TO CHARGE COX FOR QWEST'S SS7  
2 SIGNALING ASSOCIATED WITH MPB TRAFFIC, WOULD COX'S COSTS  
3 BE OFFSET BY QWEST'S REDUCTION IN CARRIER COMMON LINE OR  
4 LOCAL SWITCHING RATES?

5 A. No. As explained above it is the access customer (IXC) not Cox, who pays access  
6 charges to Qwest for MPB traffic. According to established practice and agreed-to  
7 terms of the interconnection agreement, Qwest does not bill and Cox does not pay  
8 *any* access charges (*i.e.*, CCL and switching, whether reduced or not) for the  
9 exchange of MPB traffic. Qwest has never billed Cox access charges for MPB  
10 traffic, so if it were to begin assessing a SS7 access charge, it would be a new, net  
11 increase in Cox's costs (and Qwest's revenue).

12 If the Commission approves Qwest's tariff it will be establishing a  
13 regulatory and public policy regime that abridges the existing agreements  
14 described above and sets into place cross subsidies between CLECs and IXCs.

15 Q. ARE THERE ANY OTHER POTENTIAL OR PROBABLE CROSS SUBSIDIES  
16 THAT CONCERN YOU?

17 A. Yes there are. I am concerned that there is a potential of cross subsidization  
18 between services as well. The SS7 protocol elements that the Qwest unbundling  
19 has broken out are the Integrated Services Digital Network User Part (ISUP) and  
20 Transactions Capability Part (TCAP). In turn, each of these has sub-elements as  
21 well. Simply put, ISUP establishes, supervises, and de-establishes the connections  
22 to be used by the calling and called party. TCAP provides end user services such  
23 as CLASS features (Call Block, Call Return, Call Trace and the like) for the  
24 LEC's end user customer.

25 The Qwest filing provides cross subsidization between classes of service.  
26 In response to Cox's discovery, Qwest admitted: "The filing is not designed to be

1 revenue neutral within specific classes of service.”<sup>6</sup>

2 In developing its tariff proposal, Qwest included all ISUP signaling  
3 messages transmitted to and from its SS7 network over signaling ports purchased  
4 from its access tariff. Included in these message counts were Local/EAS calls  
5 from LECs or CLECs, Qwest-originated toll calls and jointly-provided exchange  
6 access messages. The total charges that Qwest proposes to collect for these  
7 messages was then offset entirely by a reduction in Qwest’s intrastate Switched  
8 Access rates for Carrier Common Line and Local Switching. This proposal sets up  
9 an improper subsidy flow from CLECs (or their SS7 providers) to IXC’s who  
10 would receive the benefit lowered access rates. This subsidy should not be  
11 permitted by the Commission without express intent to create such a system. As I  
12 discuss later in my testimony, Qwest can avoid this subsidy by either (i) measuring  
13 the appropriate messages and excluding those related to Local/EAS, Qwest-  
14 originated toll and jointly-provided exchange access, or (ii) applying factors  
15 supplied by interconnecting carriers or their agents.

16 Q. WOULD YOU SUMMARIZE YOUR CONCERNS ABOUT CROSS  
17 SUBSIDIES?

18 A. It appears that there is (or at least there is a likelihood) of cross subsidies between  
19 LECs and IXC’s, between LECs and Qwest’s end users, and between intrastate  
20 traffic jurisdictions.

21 **F. TECHNICAL ISSUES**

22 Q. DR. COLLINS, YOU HAVE ESTABLISHED THAT CERTAIN SS7  
23 MESSAGES EXCHANGED BETWEEN COX AND QWEST SHOULD NOT BE  
24 SUBJECT TO QWEST’S PROPOSED SS7 CHARGES. HOW COULD QWEST  
25 AVOID IMPOSING THOSE IMPROPER CHARGES?

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<sup>6</sup> Qwest response to Cox Request No. 2-003 (attached at *Exhibit FRC-B*).

1 A. I can think of at least three methods that could be used to shield certain signaling  
2 messages from the SS7 access charges that Qwest's proposed tariff would  
3 inappropriately assess:

4 (1) Reconfigure Qwest's billing system such that Qwest could  
5 itself assess the correct charges for access signaling based on the actual  
6 jurisdiction of each call/message (thereby identifying all SS7 signaling  
7 messages that must be shielded from Qwest's SS7 access charges and  
8 applying the proposed tariff rate elements only to the remaining messages);

9 (2) Establish a new jurisdictional indicator, *e.g.*, percent  
10 *nonchargeable* usage (PNU), to be provided by interconnected carriers (*i.e.*,  
11 supplied individually by CLECs, or in aggregate from wholesale signaling  
12 providers) and applied to the total signaling messages exchanged between  
13 the CLECs and Qwest (thereby identifying the proportion of SS7 signaling  
14 messages that must be shielded from Qwest's SS7 access charges) – this  
15 PNU would be applied to the total messages exchanged before the  
16 (existing) PIU (percent interstate usage) jurisdictional factor is applied; or

17 (3) Establish duplicate, parallel signaling networks, each  
18 dedicated to the signaling messages associated with a single jurisdiction  
19 (thereby physically segregating all SS7 signaling messages that must be  
20 shielded from Qwest's SS7 access charges).

21 Of these three possibilities, Cox could support only the first two.

22 The first suggestion is most appropriate, inasmuch as it requires the party  
23 responsible for the tariffed service to accurately bill for its use. Qwest, when  
24 asked about its ability to determine the jurisdiction of a SS7 signaling message (see  
25 Qwest's Response to Cox Request 2-024, attached at FRC-B,) indicated that it did  
26 not have the ability to "mechanically identify jurisdiction by evaluating current  
27 SS7 message recording detail delivered by the message recording system." It is  
28 not clear to Cox what modification to these systems and/or processes would be

1 required in order to permit Qwest to identify and properly bill the SS7 messages  
2 carried by its signaling network.

3 The second suggestion (a new jurisdiction factor used to shield non-access  
4 SS7 messages from inappropriate access billing) would be acceptable to Cox if the  
5 first suggestion was not technically feasible. Qwest regularly uses a jurisdiction  
6 factor on all SS7 access messages, *i.e.*, Qwest's current SS7 tariff and its proposed  
7 SS7 tariff require interconnectors to supply a "percent interstate usage" (PIU)  
8 factor that Qwest then applies to all SS7 access messages. Where interstate and  
9 intrastate access charges differ, Qwest's application of the interconnector's PIU  
10 permits Qwest to apportion the intrastate charges to the intrastate SS7 message and  
11 the interstate charges to the interstate SS7 messages. We believe that a similar  
12 mechanism for dealing with non-access (*i.e.*, non-interstate, non-intrastate) SS7  
13 messages is a workable solution to Qwest's billing problem.

14 The third suggestion (to establish redundant signaling networks) is out of  
15 the question – it would entail an *extremely* costly and harmful resolution to what  
16 amounts to a simple Qwest billing problem. In addition to the significant (uncom-  
17 pensated) costs that Cox and other CLECs would incur for such a wasteful  
18 network configuration, it is not clear to me that the STP is able to screen and route  
19 to different signaling links, signaling messages (i) in order to somehow send  
20 local/EAS messages to the "non-access" signaling links and intraLATA toll  
21 messages to the "access" links, or (ii) in order to determine the jurisdiction of the  
22 call (in order to send Meet Point Billed traffic to a 'non-access' signaling links).  
23 Finally, it should be noted that a physical separation for purely jurisdictional  
24 purposes is not required of IXCs who purchase jurisdictionally mixed (intrastate  
25 and interstate access) SS7 signaling from Qwest. Forcing CLECs to do so would  
26 be discriminatory and competitively harmful to CLECs.

1                   **G.     RECOMMENDATIONS TO THE COMMISSION**

2     Q.     DR. COLLINS, WHAT WOULD YOU RECOMMEND THE COMMISSION DO  
3             AT THIS TIME?

4     A.     I recommend that the Commission disapprove the Qwest filing in general and  
5             specifically rule that any SS7 intrastate switched access rate element unbundling  
6             be applicable only to Qwest's termination of intrastate switched access traffic to  
7             CLECs and not to local/EAS, intraLATA toll originated by Qwest and sent to  
8             another LEC or CLEC, or jointly-provided exchange access services. Qwest's  
9             tariff should be refiled only when Qwest is capable of billing and accounting for  
10            these messages so as (i) to not violate Qwest's interconnection agreements with  
11            other LECs or CLECs and (ii) to prevent the improper flow of subsidy from  
12            CLECs to IXC's under the guise of revenue neutrality. I have provided above two  
13            appropriate methodologies that could be incorporated into such a refiled tariff.

14                   **H.     CONCLUSION**

15    Q.     DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

16    A.     Yes, it does.

**EXHIBIT FRC - A**

**CURRICULUM VITAE OF DR. COLLINS**

## **DR. FRANCIS R. COLLINS**

Dr. Collins is a senior member of the International Telecommunications Industry. He has made significant contributions to the science, engineering, business development and evolution of that industry. His professional science and engineering focus over the years has been the System Architecture, Design and Implementation of large scale public and private telecommunications and teleprocessing systems and networks. A few of the many possible examples are: the design and creation of the fundamental plan which included operations, finance, technology and training for the Public Switched Network in Saudi Arabia; a technical audit and re-engineering of the communications and telemetry systems serving the oil and gas fields in Algeria; the specification for operational and technology improvements in NIRT, the National Iranian Television Company; numbers of technical and economic audits of operating telephone companies in the United States; the technical audit and specification for quick fix technical improvements to the local exchange plant for CANTV, the telecommunications provider in Venezuela; the establishment of a strategy for and the technical evaluation of the proposals for the alternative telephone company in Australia; the establishment of competitive strategies for the National and International telephone companies in Australia; a technical, organizational and financial "due diligence" study including vendor recommendations for a 2,000,000 line switched telephone and broadband telecommunication project in Thailand; and from the commercial sector a few examples are: the design and architectural implementation of the Florists' Transworld Delivery (FTD) Mercury Network in North America; the design of corporate nationwide telecommunications and teleprocessing systems for a host of industrial clients and the provision of technical and economic counsel to telecommunications service providers.

While a teaching Dr., a Dean of Engineering, and a Provost of the University at Boston University, Dr. Collins provided consulting services in: Public Policy; Business Analysis; Revenue Production Strategy Development; the application of Science and Engineering to

the design and development of public switched networks; and Economic and Financial Counsel. This work has been done for the national and international telecommunications, cable television, and information technology community.

Dr. Collins' own applied research is in the design and implementation of unique communications, teleprocessing and information technology systems and the requisite requirements analysis and system design. In addition Dr. Collins has pursued an intellectually stimulating aspect of being a telecommunications scientist and professional engineer, that of addressing issues related to Public Switched Telecommunication System Design, Telecommunications Public Policy Development; Telephone Operating Revenue Requirements and Rate Design Issues for Developed and Developing Countries across the world. In addition he has addressed the technological, economic and public policy concerns and issues to be faced in the introduction of technology and competition into those public telecommunication and broadband networks. For the past few years, Dr. Collins' interests have centered on the introduction of deregulation and competition in the telecommunications industry in general and most recently the local exchange marketplace. He is currently viewed as one of the leading authorities in the implementation of the Telecommunication Act of 1996 and the application of the FCC's Rules and Orders in the support of that Act. He has formally addressed these issues in Arizona, California, Connecticut, Iowa, Louisiana, Michigan, Nebraska, Nevada, New Hampshire (Maine and Vermont adopted the New Hampshire results), New York, Michigan, Ohio, Oklahoma, Pennsylvania, Rhode Island, and Virginia.

Recent specific areas of work have included:

- Providing economic and technical counsel to state governments and the representation of co-carriers in negotiations between ILECs and CLECs to arrive at co-carrier agreements which satisfy the 96 Telecommunications Act requirements;

- The determination of the approach for and subsequent review of Total-Element/Service-Long Run Incremental Cost Studies, the audit of investment levels, the determination and allocation of Joint and Common Cost, the determination or verification of investment loading factors, and the determination of the Cost-of-capital and Depreciation, for the establishment of cost elements (and subsequently rates) for unbundled local exchange networks;
- The provision of technical and economic counsel to and representation of parties in TS-LRIC cost methodology development workshops whose goals are to make recommendations to regulatory bodies;
- Member of the Connecticut Telcom Industry Operations Task Force which was established by the Connecticut Commission;
- Member of the State of Connecticut Technical and Economic Task force providing oversight to the implementation of Alternative Regulation for SNET;
- Technical Counsel to the Connecticut Carrier Change Process sub-committee established by the Connecticut Commission;
- Member of the California PUC E911 Task Force; Member of the California PUC LNP Task Force;
- Member of the FCC/NANC Task Force addressing Telephone Number Optimization Issues;
- Member of NAPM, the industry management group for number portability;

- Member of INC (Industry Telephone Number Committee) a National Standards Setting Forum for Telephone Number Utilization established by the FCC;
- The provision of Technical and Economic Counsel to a California Industry Association regarding: NPA/NXX issues; New Regulatory Framework issues; Local Competition Rule issues; issues underlying Local Number Portability; the Provision of Emergency Services; Open Network and Network Architecture Issues, and the implications of the Telecommunications Act of 1996;
- Technical and Economic Audits for Operating Telephone Companies, focusing on the Construction Program, the resulting Capital Investment, and its effect on the Rate Base;
- The design of a multi-variable computer program for doing first cost and upgrade costs of CATV and Video Dial-tone Broadband Networks;
- The review and analysis of proposed Capital Programs and the proper allocation of costs to regulated and competitive services for local exchange operating telephone companies;
- The assessment of proposed Rate Design Structures and their relationship to the Capital Investment and the utility of that investment;
- The technical audit of portions of the CANTV Network in Venezuela with the recommendation for immediate and cost effect upgrading of that network through the evolutionary introduction of technology to the Capital Program;

- For the government of Australia, the evaluation of the optimum manner of introducing a significant advanced technology expansion to the existing network through the establishment of a "Second Carrier" for domestic local and long distance service;
- The managerial oversight of the design and implementation of a comprehensive training program in Saudi Arabia;
- The development of a major 124 hour technical training program in telecommunications and advanced broadband services for NYNEX. The program ran three years and over 1,200 staff members were trained.
- The technical and economic audit of a 2,000,000 line, 2.8 billion dollar expansion of the public network for video, data and voice services in the greater Bangkok, Thailand area for an investment banking firm's due diligence effort;
- The Creation of the Fundamental Plan for the terrestrial and satellite based Public Switched Network for Saudi Arabia for; Operations, Revenue Requirements, Tariff Structures, Organizational Structures and Technology Introduction;
- The Creation of the Specifications for the Loop, Switching and Trunking Equipment to Implement the Saudi Arabian Public Switched Network;
- The Architectural Oversight of the Implementation of the Public Switched Network in Saudi Arabia;
- The Analysis and Synthesis of an International Gateway Network using Space Satellite Links for Saudi Arabia;

- The Design of a National Video and Digital Data Network for National Iranian Television;
- The Analysis leading to recommendations for rectifying problems in the Telecommunications supporting the gas and oil fields in the Algerian Sahara;
- The design of a Space Satellite International Gateway Complex to support international communications to/from The Republic of Vietnam;
- The Planning and Design for a Voice and Data terrestrial and Satellite base Telecommunication System for the Provision of Educational and Medical Services to remote regions in the United States;
- The analysis required for the design and then the design, installation, staff training, and establishment of operational and cost control systems for nationwide voice, television and data networks for private industry and national governments. These include projections of needed telecommunications capacity and services based on Operational Research methods applied to the particular situation;
- The Architectural Design,, Public Policy Impact Analysis; and Financial Impact Assessment; System and Subsystem Specification; Integration, Test and Evaluation of Large Scale Teleprocessing systems;
- The specification of components for nationwide on-line, real time voice/data systems employing thousands of terminals;
- The architectural design and engineering specification for mobile telephone systems considering the cost performance aspects of standard vs. cellular configurations;

- The integration of cellular signaling and billing transmission protocols with Equal Access, Feature Group D formats;
- The evaluation of start-up companies and their products for investors or venture capital concerns;

Dr. Collins has had forty years of experience as a systems engineer, engineering manager, executive and senior consultant in the telecommunication, navigation and digital electronic fields. He is recognized as an international expert in telecommunications; science, technology, economics and public policy. As a member of technical, middle and top management levels, he has held marketing, profit, overhead, cost, planning, and administrative control positions for a number of top companies: Bell Telephone Laboratories, the MITRE Corporation, the Magnavox Company, Analytical Systems Corporation, Arthur D. Little, Inc., and Boston University.

His Executive Management positions have included:

- Executive Project Manager, the MITRE Corp.;
- Director, the Magnavox Communications Research Laboratories;
- Executive Vice President, The Analytical Systems and Engineering Corporation;
- Managing Project Director, Arthur D. Little Inc.;
- Dean of the College of Engineering, Boston University;
- Provost and Director of Sponsored Research, Boston University;
- President and CEO, CCL Corporation.

He is the author of over 100 technical papers and has processed patents in the design of telecommunications, information technology, and multi-media broadband networks and

equipment. He currently is in the process of perfecting two patents related to the "convergence" of the cable and telephone industries. In addition, he has accomplished work and published confidential reports in the areas of requirement analysis and telecommunications system performance and design for the Army, Navy and Air Force. These systems, both satellite and terrestrial, typically employed advanced modulation techniques, equipment and systems to support generic mission profiles.

Dr. Collins was awarded the B.S.E.E. degree Cum Laude by Northeastern University and the M.S.E.E. degree with high honors as part of Bell Telephone Laboratories Educational Program. This certificate program involved additional higher education above the Masters degree level. These courses were taken at the Massachusetts Institute of Technology and in residence at the Laboratories. In that work his educational emphasis was on digital switching and network transmission systems. His doctorate (Ph.D. in Telecommunications) was awarded by the Union Graduate School. In 1996 Dr. Collins was appointed to the "International Academy" in the position of Academician (Dr. Emeritus in the US) by the Faculty of the University of Moscow, St. Petersburg, Russia.

Dr. Collins has been a Dr. of Engineering of the undergraduate and graduate school faculties of Northeastern University, Lowell University, and Boston University. His academic career includes the organization and presentation of courses in the areas of: digital computer/electronics; solid state circuit design; synthesis of linear passive bilateral networks; the theory of time varying fields; the theories of dynamic systems with applications of classical (transform calculus techniques) and modern (state space formulations) solutions; communications theory and the design of communications systems. He was a Dr. of Engineering and a Dean of the College of Engineering, responsible for the Colleges Research Activity, at Boston University from 1976 to 1978 and Provost, a position similar to Executive Vice President, responsible for the research

activity of the University with responsibility for The Office of Research Programs from 1978 to 1981. During his tenure at Boston University Dr. Collins was sought after for consulting services by national and international businesses, industries, and governments and provided these services to the extent allowed by his faculty affiliation.

From 1981 to the present he has been providing consulting services through CCL Corporation and additionally is "Of Counsel" to a number of other distinguished firms including Arthur D. Little, Cambridge Strategic Management Group, Exeter Associates, and J.W. Wilson Associates.

Dr. Collins is a registered Professional Engineer in the Commonwealth of Massachusetts; a member of both the Massachusetts and National Societies of Professional Engineers; a past Vice President and current Executive Board Member of the Massachusetts Chapter, a member of the Legislative and Government Affairs subcommittees of the National and Massachusetts Societies, a member of two national engineering honor societies, Eta Kappa Nu and Tau Beta Pi; a past member of the Institute of Electrical and Electronics Engineers; a member of the National Society of Engineering Educators; and a member of the National Association of Cable Television Engineers. He has served on numbers of National and International professional advisory boards, panels, and North American Standards setting Organizations over the years and has served Internationally as a member of the International Telecommunications Union in Geneva, Switzerland. He is currently a member of a number of National Telecommunications Standards and Public Policy Setting Bodies operating under the auspices of the Federal Communications Commission.

**EXHIBIT FRC - B**

**EXCERPTS OF QWEST RESPONSES  
TO COX DATA REQUESTS**

**EXHIBIT FRC - B**

**EXCERPTS OF QWEST RESPONSES  
TO COX DATA REQUESTS**

Arizona  
T-01051B-01-0391  
COX 02-003

INTERVENOR: Cox Arizona Telecom

REQUEST NO: 003

Provide the analysis and/or synthesis which shows that the tariffed SS7 rate elements are:

- 1) revenue neutral as to interLATA, intraLATA, and local traffic in general and "800", LIDB and Alternate Billing Services in particular.
- 2) revenue neutral as to end user services such as CLASS.
- 3) revenue neutral versus current compensation to Qwest from differing categories of interconnecting service providers (e.g., interexchange, local exchange (CLEC and independent ILEC), CMRS or wireless providers, etc.)

RESPONSE:

In determining the revenue neutrality of this filing, Qwest considered all call set-up signaling message traffic currently traversing the Qwest signaling network and then offset the revenue associated with that traffic with reductions in other Switched Access rate elements. The filing is not designed to be revenue neutral within specific classes of service, as this data request suggests. See Confidential Attachment A, which will be provided upon receipt of a signed Confidentiality Agreement, showing revenue impact of this filing.

Respondent: Herb Ruprecht, Sr. Project Manager, Qwest

Arizona  
T-01051B-01-0391  
COX 02-007

INTERVENOR: Cox Arizona Telecom

REQUEST NO: 007

Please provide a copy of:

- 1) the QWEST (USWC) petition for waiver from the Ameritech model (Ameritech SS7 Waiver Order) filed on July 22, 1999;
- 2) the Common Carrier Bureau's Order, In the Matter of Ameritech Operating Companies Petition for Waiver of Part 69 of the Commission's Rules to establish Unbundled Rate Elements for SS7 Signaling;

RESPONSE:

- 1) A copy of the USWEST/Qwest Part 69 Waiver is included as Attachment A.
- 2) This document requested is a matter of public record and is equally as available to Cox as it is to Qwest.

Respondent: Char Kuder, SS7 Product Manager, Qwest

Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554

In the Matter of )  
 )  
Petition to Establish Part 69 Rate )  
Elements for SS7 Signaling )

**EXPEDITED PETITION OF U S WEST COMMUNICATIONS, INC.**

U S WEST Communications, Inc. ("U S WEST"), pursuant to Section 69.4(g)(1)(i) of the Federal Communications Commission's ("Commission") Rules, urges the Commission to find that U S WEST's establishment of new rate elements for Signaling System 7 ("SS7") signaling would be in the public interest. To provide these unbundled SS7 capabilities at the earliest possible date, U S WEST requests that the Commission treat this petition in an expedited manner.

**I. INTRODUCTION**

Under the Commission's rules, "[l]ocal exchange carriers subject to price cap regulation . . . may establish one or more switched access rate elements for a new service . . . upon approval of a petition demonstrating that: (i) The establishment of the new rate element or elements would be in the public interest." 47 C.F.R. § 69.4(g)(1)(i).

U S WEST's SS7 network uses Integrated Service Digital Network User Part ("ISUP") messages to establish transmission paths over which telephone calls are carried (i.e., to establish call set-up). U S WEST currently bundles SS7 call set-up with other local switching functionality. SS7 call set-up costs are accordingly recovered on a per minute of use basis through the local

switching charge. In this petition, U S WEST proposes to establish separate rate elements to recover SS7 call set-up costs.<sup>1</sup>

Specifically, U S WEST requests that the Commission allow it to restructure its existing local switching access charges to establish, for each originating and terminating call attempt, call set-up charges for: (1) the formulation of SS7 messages; (2) the transportation of SS7 messages to or from a local Signal Transfer Point ("STP"); and (3) the switching of SS7 messages at the local STPs. These new rate elements would be assessed on each switched access originating or terminating call attempt, and would not vary with the length of a call. Accordingly, these restructured rates would more accurately reflect the manner in which set-up costs are incurred.

In addition to SS7 call set-up, SS7 signaling is used to obtain information from various databases, such as the Line Information Database ("LIDB") and 800 Access Service Database. Transaction Capabilities Application Part ("TCAP") messages are necessary to access various databases, and to support toll free and alternatively billed calls, Custom Local Area Signaling Services ("CLASS"), and other advanced services. U S WEST accordingly requests that the Commission allow it to establish new rate elements for the transport and switching of transient TCAP messages, to allow U S WEST's carrier customers to obtain information from foreign (*i.e.*, non-U S WEST) databases through the use of unbundled SS7 signaling from

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<sup>1</sup> The Commission has expressly allowed price cap local exchange carriers ("LECs") to establish unbundled rate elements for SS7 signaling. *See In the Matter of Access Charge Reform, Price Cap Performance Review for Local Exchange Carriers, Transport Rate Structure and Pricing, and End User Common Line Charges*, CC Docket Nos. 96-262, 94-1, 91-213, 95-72, *First Report and Order*, 12 FCC Rcd. 15982, 16007 ¶ 65 (1997) ("Access Charge Reform Order").

U S WEST.<sup>2</sup> U S WEST currently recovers the costs of TCAP messages associated with its own 800 Carrier ID and LIDB database queries in the query rates for those services, and will continue to do so under the revised structure.

U S WEST believes that the introduction of ISUP call set-up rate elements by restructuring local switching rate elements into local switching and call set-up ISUP rate elements and the establishment of new rate elements for transient TCAP messages would serve the public interest and requests that the Commission rule on this petition at the earliest possible date.

## **II. RESTRUCTURED RATE ELEMENTS FOR SS7 SET-UP CHARGES**

U S WEST requests that it be allowed to establish the following switched access rate elements for SS7 call set-up costs:

- **ISUP Signal Formulation:** this rate element will cover the cost of formulating ISUP messages on a per call attempt basis (per initial address message ("IAM")). This rate element does not exist under the current rate structure.
- **ISUP Signal Transport:** this rate element will recover the costs of transporting signaling data between the local STP and the end office/tandem Signaling Point ("SP")/Service Switching Point ("SSP") on a per call attempt basis. This rate element does not exist under the current rate structure.
- **ISUP Signal Switching:** this rate element will recover the cost of switching SS7 call set-up messages at the local STP on a per call attempt basis. This rate element does not exist under the current rate structure.

This SS7 rate structure constitutes a restructuring of existing rate elements under the Commission's price cap regulations, and would be revenue

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<sup>2</sup> Transient TCAP messages are currently traversing U S WEST's SS7 network without charge; U S WEST merely wishes to recover the appropriate charges for providing such services.

neutral.<sup>3</sup> The recurring unit cost of these rate elements will consist of the ongoing costs to provide this service. Investments include those associated with the total number of local STPs, total number of A-links (excluding A-links connecting the Service Control Point to the regional STP), C-links and SP/SSPs, measuring equipment, engineering costs, labor to install and remove the equipment, and miscellaneous minor material loadings.

Finally, U S WEST proposes that all of these rate elements be placed in the Local Switching Category of the Traffic Sensitive Basket. This is consistent with the Commission's decision in the *Access Charge Reform Order*, in which the Commission required that LECs without unbundled SS7 call set-up charges, move revenues associated with SS7 costs from the Transport Interconnection Charge ("TIC") in the Trunking Basket to the Local Switching Category of the Traffic Sensitive Basket.<sup>4</sup> Such placement is appropriate because call set-up is a function of local switching, application of the rate elements is on a per-call attempt basis, and the individual rate elements are not subject to competition.<sup>5</sup>

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<sup>3</sup> U S WEST will demonstrate that the restructuring is revenue neutral in the tariff review process. See *In the Matter of Ameritech Operating Companies, Petition for Waiver of Part 69 of the Commission's Rules to Establish Unbundled Rate Elements for SS7 Signalling*, Order, 11 FCC Rcd. 3839, 3856 ¶ 39 (1996) ("*Ameritech SS7 Waiver Order*") (accepting Ameritech's commitment to demonstrate revenue neutrality in the tariff review process).

<sup>4</sup> *Access Charge Reform Order*, 12 FCC Rcd. at 16076 ¶ 217.

<sup>5</sup> U S WEST believes that it should not be required to make cost-of-service showings to support the proposed rates for this rate restructure. As the Commission has previously acknowledged, LECs generally do not need to file full cost support to justify a rate restructure. *Ameritech SS7 Waiver Order*, 11 FCC Rcd. at 3856 ¶ 40. Although the Commission did require Ameritech to file cost support in establishing new SS7 rate elements, it did so largely because

### III. NEW RATE ELEMENTS FOR TRANSPORT AND SWITCHING OF TRANSIENT TCAP MESSAGES

U S WEST requests that it be allowed to establish the following rate elements for transport and switching of transient TCAP messages:

- **TCAP Signal Transport:** this rate element will recover the costs of transporting signaling data between U S WEST's STP and the end office/tandem SP/SSP on a per-data-request basis.
- **TCAP Signal Switching:** this rate element will recover the costs of switching SS7 call set-up messages at the U S WEST STP on a per-data-request basis.

These are both new rate elements that will be filed under the Commission's new services rules, and should also reside in the local switching category of the traffic-sensitive basket. These rate elements will apply only to transient TCAP messages sent by interexchange carriers to U S WEST's SS7 networks to obtain information from foreign (*i.e.*, non-U S WEST) databases. U S WEST will continue to recover the costs of TCAP messages transmitted in conjunction with its own services (*e.g.*, LIDB Query Service, 800 Database Service) in existing rate elements (*e.g.*, LIDB query, 800 Database query).

### IV. GRANTING THE INSTANT PETITION WILL SERVE THE PUBLIC INTEREST

The public interest will be served by granting the instant petition.

Granting the petition will permit U S WEST to recover its SS7 call set-up costs in a way that more accurately reflects the manner in which those costs are incurred. The current rate structure, which bundles switched access services with signaling services on a minute of use basis, is a rate structure that forces

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the Commission had no prior experience with SS7 rates, which is no longer the case. *Id.*

some customers to subsidize others.<sup>6</sup> Specifically, because the current rate structure is based on the duration of the underlying telephone call, entities making calls of longer duration subsidize telephone calls of shorter duration.<sup>7</sup> Moreover, the current rate structure precludes U S WEST from recovering set-up charges from calls that are not completed—even though U S WEST incurs the set-up cost for originating and terminating calls regardless of whether the call is completed.<sup>8</sup> Consequently, completed calls subsidize calls that do not complete. The revised rate structure would more accurately recover costs from the cost causers.

With respect to TCAP messages, establishing TCAP rate elements will allow increased competition in telecommunications from entities that cannot afford the luxury of an SS7 network by allowing access to foreign databases through the use of transient TCAP messages carried over U S WEST's SS7 networks.

Respectfully submitted,

U S WEST COMMUNICATIONS, INC.

Of Counsel,  
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By:

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Its Attorney

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<sup>6</sup> See *Ameritech SS7 Waiver Order*, 11 FCC Rcd. at 3853 ¶ 32.

<sup>7</sup> *Id.* at 3853-54 ¶ 33.

<sup>8</sup> *Access Charge Reform Order*, 12 FCC Rcd. at 16042 ¶ 138.

Arizona  
T-01051B-01-0391  
COX 02-024

INTERVENOR: Cox Arizona Telecom

REQUEST NO: 024

Provide detailed descriptions of QWEST's ability to determine the jurisdiction of SS7 signaling messages and whether such ability is through routine recording and measurement of such messages, through special traffic studies, or any other method(s) used or available to QWEST

RESPONSE:

Qwest currently uses Percent Interstate Usage declarations delivered by the customer to determine jurisdictional information for billing. Qwest does not have the ability to mechanically identify jurisdiction by evaluating current SS7 message recording detail delivered by the message recording system.

Respondent: Char Kuder, SS7 Product Manager, Qwest